

CLAIMS

What is claimed is:

1. A method performed by a node of a wavelength multiplex optical network, the method comprising:
 - detecting at a node that at least a portion of a first unidirectional path of an optical circuit is down, the first unidirectional path being originated from a first terminating node; and
 - signaling the first terminating node by removing at least a portion of light of a second unidirectional path in an opposite direction of the first unidirectional path of the optical circuit, to indicate a path between the node and the first terminating node is down.
2. The method of claim 1, wherein the first terminating node is notified of the detection by not receiving at least a portion of the light of the second unidirectional path.
3. The method of claim 1, wherein the first unidirectional path is detected based on a loss of at least a portion of light of the first unidirectional path.
4. The method of claim 1, further comprising:
 - detecting a wavelength of the first unidirectional path (first path/wavelength) is down;
 - and
 - signaling the first terminating node via a second path/wavelength of the second unidirectional path with respect to the status of the first path/wavelength.

5. The method of claim 4, wherein the first path/wavelength is detected based on a loss of light of the first path/wavelength, and wherein the first terminating node is notified by not receiving the light of the second path/wavelength.
6. The method of claim 1, further comprising:
 - determining whether the node is a terminating node of the optical circuit with respect to the first unidirectional path,
 - wherein the signaling is performed only if the node is a terminating node of the optical circuit.
7. The method of claim 1, wherein the first and second unidirectional paths are within different fibers.
8. The method of claim 1, wherein the signaling is performed without converting optical signals of the first unidirectional path to electrical signals.
9. An apparatus, comprising:
 - a node to be coupled to a wavelength division multiplex optical network, the node including,
 - a detection module to detect that at least a portion of a first unidirectional path of an optical circuit is down, the first unidirectional path being originated from a first terminating node, and
 - a control module coupled to the detection module to signal the first terminating node by removing at least a portion of light of a second unidirectional path in an opposite direction of the first unidirectional path of the

optical circuit, to indicate that a path between the node and the first terminating node is down.

10. The apparatus of claim 9, wherein the first terminating node is notified of the detection by not receiving at least a portion of light of the second unidirectional path.
11. The apparatus of claim 9, wherein the first unidirectional path is detected based on a loss of at least a portion of light of the first unidirectional path.
12. The apparatus of claim 9, wherein the detection module detects a wavelength of the first unidirectional path (first path/wavelength) is down, and wherein the control module signals the first terminating node via a second wavelength of the second unidirectional path (second path/wavelength) with respect to the status of the first path/wavelength.
13. The apparatus of claim 12, wherein the first path/wavelength is detected based on a loss of light of the first path/wavelength, and wherein the first terminating node is notified by not receiving the light of the second path/wavelength.
14. The apparatus of claim 9, wherein the control module further determines whether the node is a terminating node of the first unidirectional path of the optical circuit, and wherein the control module signals the first terminating node only if the node is a terminating node of the optical circuit.
15. The apparatus of claim 14, wherein the first and second unidirectional paths are within different fibers.

16. The apparatus of claim 9, wherein the detection module signals the first terminating node without converting the respective optical signals of the first unidirectional path to electrical signals.
17. A wavelength multiplex optical network, comprising:
 - a plurality of nodes interconnected via one or more links, each of the plurality of nodes to
 - detect node that at least a portion of a first unidirectional path of an optical circuit is down, the first unidirectional path being originated from a first terminating node, and
 - signal the first terminating node by removing at least a portion of light of a second unidirectional path in an opposite direction of the first unidirectional path of the optical circuit, to indicate a path between the respective node and the first terminating node is down.
18. The network of claim 17, wherein the first terminating node is notified of the detection by not receiving at least a portion of the light of the second unidirectional path.
19. The network of claim 17, wherein the first unidirectional path is detected based on a loss of at least a portion of light of the first unidirectional path.
20. The network of claim 17, wherein the node further
 - detects a wavelength of the first unidirectional path (first path/wavelength) is down,
 - and
 - signals the first terminating node via a second path/wavelength of the second unidirectional path with respect to the status of the first path/wavelength.

21. The network of claim 20, wherein the first path/wavelength is detected based on a loss of light of the first path/wavelength, and wherein the first terminating node is notified by not receiving the light of the second path/wavelength.
22. The network of claim 1, wherein the access node further
determines whether the node is a terminating node of the optical circuit with respect to
the first unidirectional path,
wherein the signaling is performed only if the node is a terminating node of the optical
circuit.
23. The network of claim 22, wherein the first and second unidirectional paths are within
different fibers.
24. The network of claim 17, wherein the signaling is performed without converting optical
signals of the first unidirectional path to electrical signals.
25. A method performed by a node of a wavelength multiplex optical network, the method
comprising:
detecting at a node that at least a portion of functionality of a wavelength of a first
unidirectional path (first path/wavelength) of an optical circuit fails to operate,
the first unidirectional path being originated from a first terminating node; and
signaling the first terminating node by removing the light of a second wavelength a
second unidirectional path (second path/wavelength) in an opposite direction
of the first unidirectional path of the optical circuit, to indicate the failure of
the first path/wavelength.

26. An apparatus, comprising:

a node to be coupled to a wavelength division multiplex optical network, the node including,

a detection module to detect that a wavelength of a first unidirectional path (first path/wavelength) of an optical circuit fails to perform, the first unidirectional path being originated from a first terminating node, and
a control module coupled to the detection module to signal the first terminating node by removing a light of a second wavelength a second unidirectional path (second path/wavelength) in an opposite direction of the first unidirectional path of the optical circuit, to indicate the first path/wavelength is down.